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Profile	Reference	Temp. (°C)*	Maximum load		Maximum sliding speed			Material	Dimensions (mm)	Page
			Dynamic v < 0,01 m/s	Static v = 0 m/s	Dry m/s	Grease m/s	Oil m/s			
<b>9a Rolled bushings</b>										
	<b>23BK-1</b>	-195 +250	140	250	2,5	-	5	Steel Porous bronze PTFE	3 ... 300	<b>1076 - 1083</b>
	<b>23BK-1...F</b>	-195 +250	140	250	2,5	-	5	Steel Porous bronze PTFE	6 ... 60	<b>1084 - 1085</b>
	<b>23BK-2</b>	-40 +110	120	250	0,5	2,5	-	Steel Porous bronze POM	8 ... 150	<b>1086 - 1089</b>
	<b>23BK-3</b>	-40 +150	80	150	-	2,5	10	Steel Bronze	10 ... 245	<b>1090 - 1093</b>
	<b>23BK090</b>	-100 +150	40	120	-	2	> 2	Bronze	10 ... 240	<b>1094 - 1097</b>
	<b>23BK090...F</b>	-100 +150	40	120	-	2	> 2	Bronze	30 ... 120	<b>1098 - 1099</b>
	<b>23FT090</b>	-100 +250	40	120	-	2	> 2	Bronze	16 ... 60	<b>1100 - 1101</b>

<b>9b Massive bushings</b>										
	<b>23HST</b>	-195 +250	150	250	-	0,6	0,6	Hardened Steel	20 ... 90	<b>1102 - 1103</b>

<b>9c Composite bushings</b>										
	<b>23BK500-15N</b>	-200 +130	70	200	2	5	5	Polyester fabric + polyester resin + PTFE	20 ... 120	<b>1104 - 1105</b>
	<b>23BK-EP1</b>	-100 +160	120	240	0,2	-	-	Epoxy resin + PTFE	20 ... 120	<b>1106 - 1107</b>

### 1 TECHNICAL SPECIFICATIONS

For a well understanding of this catalogue, we hereby explain the most important technical specifications which we will use frequently. For a slide bearing with an internal diameter **d** and a length **L**:

- Specific load = **P (N/mm<sup>2</sup>)**

If **F** is perpendicular charge (N):

$$P = \frac{F}{d \cdot L}$$

- Sliding speed = **V (m/s)**

**Bush rotation:** if **n** is the rotation speed (min<sup>-1</sup>)

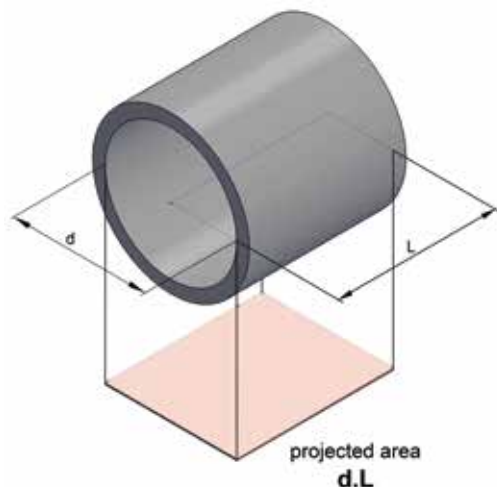
$$V = \frac{d \cdot \pi \cdot n}{60 \cdot 10^3}$$

**Bush oscillation:** if **n** is the oscillation frequency (min<sup>-1</sup>) and **μ** the angle of oscillation:

$$V = \frac{d \cdot \pi}{60 \cdot 10^3} \cdot \frac{2\mu \cdot n}{360}$$

- **PV-factor = P.V (N/mm<sup>2</sup>. m/s)**

The **PV factor** is the specific load multiplied by the speed. It is the most important factor to size an application.



### 2 CALCULATION OF THE LIFESPAN

The operating life for a slide bearing depends on the specific load, the sliding speed, the temperature and the material of the rod (surface roughness and hardness). On request, we can calculate the lifespan, which will be an approximate value.

### 3 PROTECTION OF THE ASSEMBLIES

To avoid any pollution of your bushing, we recommend the use of wipers **10SWP** or **10SWPM** on both sides (Fig. 1074).

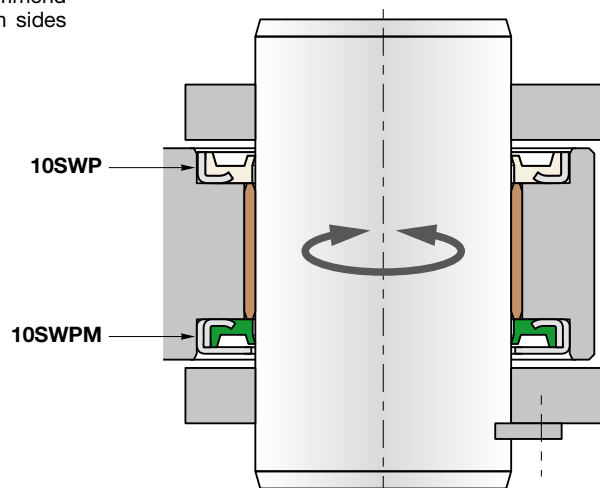


Fig. 1074

### 4 DESIGN OF THE ASSEMBLIES

To avoid stress concentrations on the edges of the bearing, it is preferable to provide a small clearing or let the bearing protrude (Fig. 1075A and Fig. 1075B).

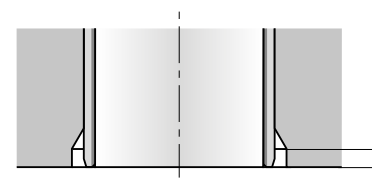


Fig. 1075A

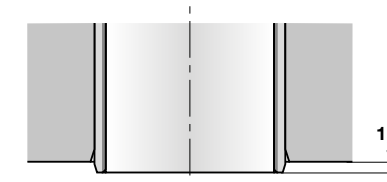


Fig. 1075B

### 5 ASSEMBLY OF ROLLED (D ≤ 50mm), MASSIVE AND COMPOSITE BEARINGS

To assemble rolled slide bearings with an external diameter up to 50 mm, please proceed as shown by Fig. 1075C. The adapted diameter at size **h** gives us the possibility to press the bearing in the housing with a depth **h**.

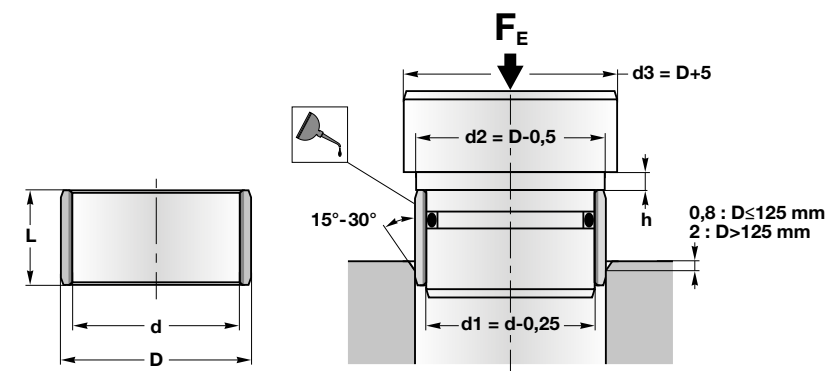


Fig. 1075C

### 6 ASSEMBLY OF ROLLED BEARINGS (D > 50mm)

For the assembly of slide bearings with a external diameter larger than 50 mm, we recommend the use of a mounting ring as shown in Fig. 1075D.

On request we can calculate the force **F<sub>E</sub>**.

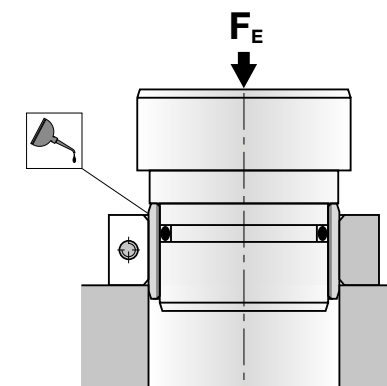
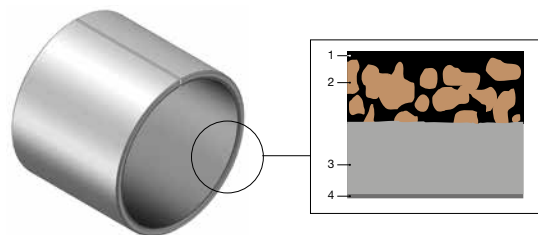


Fig. 1075D



23BK-1

### Maintenance free rolled bushings



**23BK-1** are tri-layer maintenance-free bushings with a base of low carbon steel, whereupon a porous bronze layer is sintered. After rolling process completed, PTFE is impregnated into the interstices of this bronze layer.

**23BK-1** self-lubricating bushings offer very good wear and low friction performance even in dry running conditions and have good physical and mechanical properties, also certain chemical properties.

They are suitable for linear, rotating and oscillating movements.

#### Technical specification

Temperature	- 195 to + 250°C
Friction coefficient	see table below
<b>Maximum load</b>	
Dynamic	140 N/mm <sup>2</sup>
Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
Dry	2,5 m/s
In hydrodynamic working	5 m/s
<b>PV-factor</b>	
Continuously	1,8 N/mm <sup>2</sup> . m/s
Temporarily	3,6 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,4 µm
Shaft hardness	HB > 350

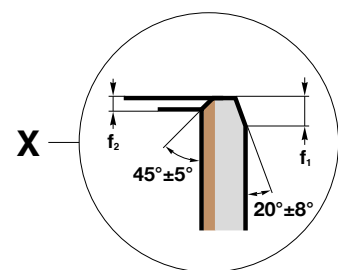
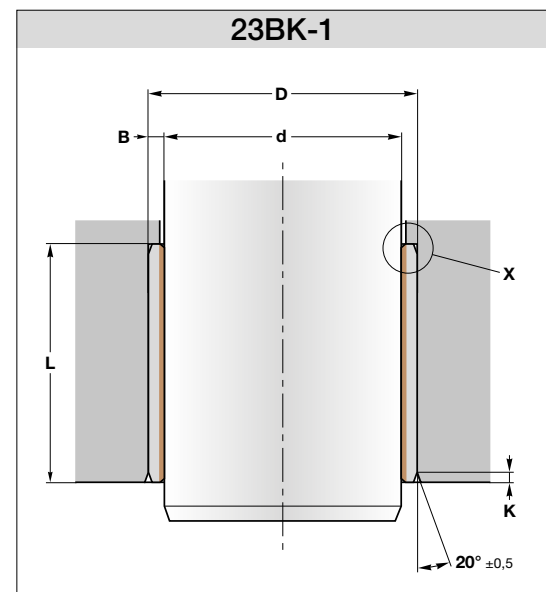
#### Advantages

- For dry and maintenance-free applications
- Absorption of noise and vibrations
- Hydrodynamic applications possible
- High loads
- Good chemical resistance
- Low wear and friction
- No stick-slip
- High temperature range
- High sliding speed
- No water absorption
- Low clearance during operation
- Limited dimensions

**Please contact us for applications approaching maximum values.**

Friction coefficient	p N/mm <sup>2</sup>	v m/s
0,025	250-140	< 0,001
0,04-0,07	140-60	0,001-0,005
0,07-0,1	60-10	0,005-0,05
0,1-0,15	10-1	0,05-0,5
0,15-0,25	< 1	0,5-2

- 1 Modified PTFE: 0,01 -0,05 mm
- 2 Sintered bronze layer: 0,20 - 0,35 mm
- 3 Steel roll
- 4 Surface protection: ~0,002 mm



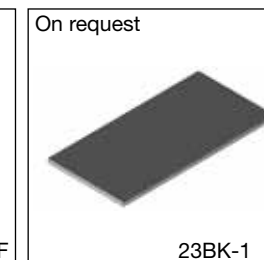
D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
0,75	0,5	0,25
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

Tolerances			
	d	D	L
d ≤ 4	h6	H6	
4 < d < 80	f7	H7	± 0,25
d ≥ 80	h8	H7	

d	D	L	Reference
3	4,5	3	23BK-1 0303
	4,5	4	23BK-1 0304
	4,5	5	23BK-1 0305
4	4,5	6	23BK-1 0306
	5,5	3	23BK-1 0403
	5,5	4	23BK-1 0404
	5,5	5	23BK-1 0405
	5,5	6	23BK-1 0406
5	5,5	8	23BK-1 0408
	5,5	10	23BK-1 0410
	7	4	23BK-1 0504
6	7	5	23BK-1 0505
	7	8	23BK-1 0508
	7	10	23BK-1 0510
7	8	4	23BK-1 0604
	8	5	23BK-1 0605
	8	6	23BK-1 0606
8	8	7	23BK-1 0607
	8	8	23BK-1 0608
	8	10	23BK-1 0610
9	9	5	23BK-1 0705
	9	7	23BK-1 0707
	9	10	23BK-1 0710
10	10	4	23BK-1 0804
	10	5	23BK-1 0805
	10	6	23BK-1 0806
11	10	7	23BK-1 0807
	10	8	23BK-1 0808
	10	10	23BK-1 0810
12	10	12	23BK-1 0812
	11	10	23BK-1 0910

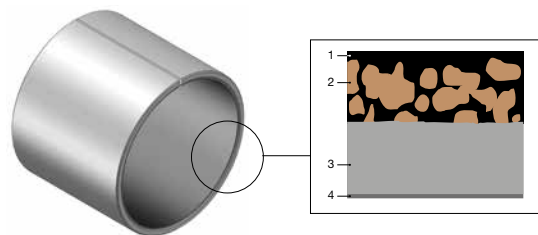
d	D	L	Reference
10	12	6	23BK-1 1006
	12	7	23BK-1 1007
	12	8	23BK-1 1008
12	12	10	23BK-1 1010
	12	12	23BK-1 1012
	12	15	23BK-1 1015
	12	20	23BK-1 1020
	14	6	23BK-1 1206
13	14	7	23BK-1 1207
	14	8	23BK-1 1208
	14	9	23BK-1 1209
14	14	10	23BK-1 1210
	14	12	23BK-1 1212
	14	15	23BK-1 1215
15	14	18	23BK-1 1218
	14	20	23BK-1 1220
	14	25	23BK-1 1225
16	15	8	23BK-1 1308
	15	10	23BK-1 1310
	15	15	23BK-1 1315
17	16	10	23BK-1 1410
	16	12	23BK-1 1412
	16	15	23BK-1 1415
18	16	20	23BK-1 1420
	16	25	23BK-1 1425
	17	8	23BK-1 1508
19	17	10	23BK-1 1510
	17	12	23BK-1 1512
	17	15	23BK-1 1515
20	17	20	23BK-1 1520
	17	25	23BK-1 1525





23BK-1

## Maintenance free rolled bushings



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Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
Dry	2,5 m/s
In hydrodynamic working	5 m/s
<b>PV-factor</b>	
Continuously	1,8 N/mm <sup>2</sup> . m/s
Temporarily	3,6 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,4 µm
Shaft hardness	HB > 350

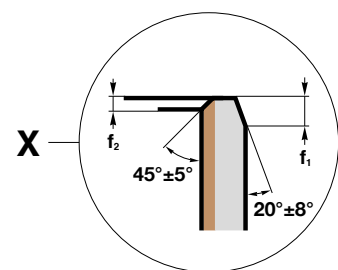
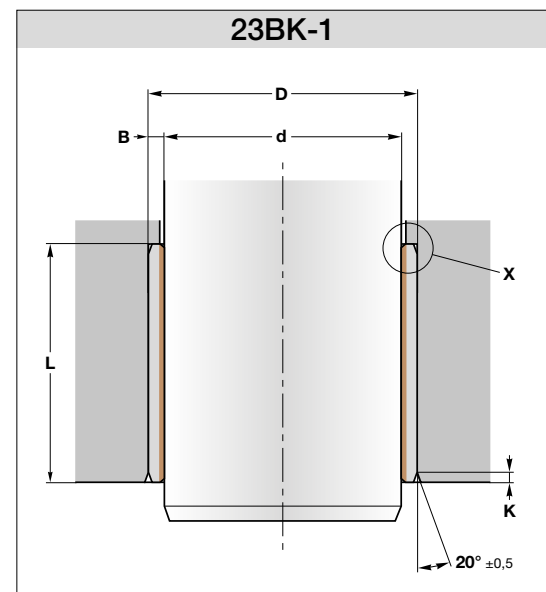
### Advantages

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0,15-0,25	< 1	0,5-2

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- 4 Surface protection: ~0,002 mm



D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
0,75	0,5	0,25
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

Tolerances			
	d	D	L
d ≤ 4	h6	H6	
4 < d < 80	f7	H7	± 0,25
d ≥ 80	h8	H7	

d	D	L	Reference	
16	18	10	23BK-1 1610	
	18	12	23BK-1 1612	
	18	15	23BK-1 1615	
	18	20	23BK-1 1620	
	18	25	23BK-1 1625	
	17	19	12	23BK-1 1712
19		15	23BK-1 1715	
18		20	10	23BK-1 1810
		20	12	23BK-1 1812
	20	14	23BK-1 1814	
20	20	15	23BK-1 1815	
	20	20	23BK-1 1820	
	20	25	23BK-1 1825	
	23	5	23BK-1 2005	
		10	23BK-1 2010	
		12	23BK-1 2012	
23	15	23BK-1 2015		
	20	23BK-1 2020		
	25	23BK-1 2025		
	23	30	23BK-1 2030	
		25	10	23BK-1 2210
			12	23BK-1 2212
15	23BK-1 2215			
24	25	20	23BK-1 2220	
	25	25	23BK-1 2225	
	25	30	23BK-1 2230	
	27	15	23BK-1 2415	
		20	23BK-1 2420	
		25	23BK-1 2425	
27	30	23BK-1 2430		

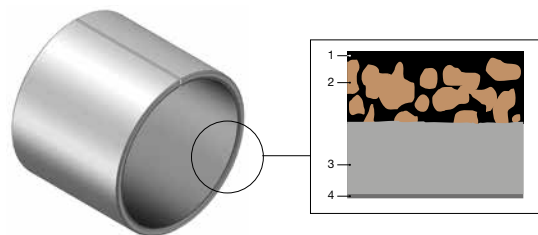
d	D	L	Reference	
25	28	5	23BK-1 2505	
	28	10	23BK-1 2510	
	28	12	23BK-1 2512	
26	28	15	23BK-1 2515	
	28	20	23BK-1 2520	
	28	25	23BK-1 2525	
	28	30	15	23BK-1 2615
		30	20	23BK-1 2620
		30	30	23BK-1 2630
28	32	12	23BK-1 2812	
	32	15	23BK-1 2815	
	32	20	23BK-1 2820	
	30	32	25	23BK-1 2825
32		30	23BK-1 2830	
32		35	23BK-1 2835	
34		12	23BK-1 3012	
		15	23BK-1 3015	
		20	23BK-1 3020	
34	25	23BK-1 3025		
	30	23BK-1 3030		
	35	23BK-1 3035		
	34	40	23BK-1 3040	
		36	8	23BK-1 3208
			12	23BK-1 3212
20	23BK-1 3220			
36	25	23BK-1 3225		
	30	23BK-1 3230		
	40	23BK-1 3240		
36	40	40	23BK-1 3640	





23BK-1

## Maintenance free rolled bushings



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### Technical specification

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Friction coefficient	see table below
<b>Maximum load</b>	
Dynamic	140 N/mm <sup>2</sup>
Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
Dry	2,5 m/s
In hydrodynamic working	5 m/s
<b>PV-factor</b>	
Continuously	1,8 N/mm <sup>2</sup> . m/s
Temporarily	3,6 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,4 µm
Shaft hardness	HB > 350

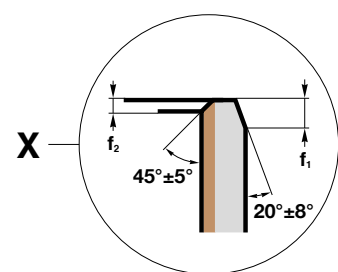
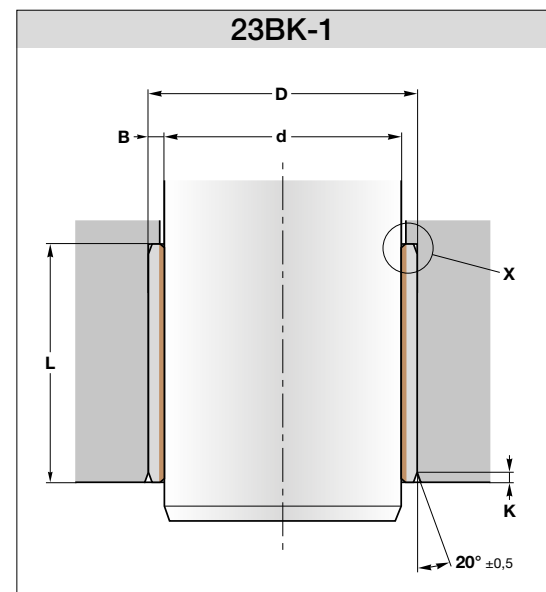
### Advantages

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- Hydrodynamic applications possible
- High loads
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- Low wear and friction
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Friction coefficient	p N/mm <sup>2</sup>	v m/s
0,025	250-140	< 0,001
0,04-0,07	140-60	0,001-0,005
0,07-0,1	60-10	0,005-0,05
0,1-0,15	10-1	0,05-0,5
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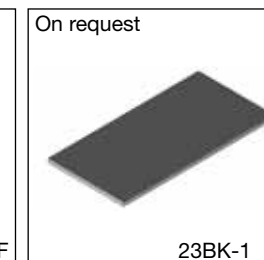
D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
0,75	0,5	0,25
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

Tolerances			
	d	D	L
d ≤ 4	h6	H6	
4 < d < 80	f7	H7	± 0,25
d ≥ 80	h8	H7	

d	D	L	Reference
35	39	10	23BK-1 3510
	39	12	23BK-1 3512
	39	15	23BK-1 3515
	39	20	23BK-1 3520
	39	25	23BK-1 3525
	39	30	23BK-1 3530
	39	35	23BK-1 3535
	39	40	23BK-1 3540
	39	50	23BK-1 3550
38	42	20	23BK-1 3820
	42	40	23BK-1 3840
40	44	12	23BK-1 4012
	44	15	23BK-1 4015
	44	20	23BK-1 4020
	44	25	23BK-1 4025
44	44	30	23BK-1 4030
	44	35	23BK-1 4035
	44	40	23BK-1 4040
	44	50	23BK-1 4050
45	50	20	23BK-1 4520
	50	25	23BK-1 4525
	50	30	23BK-1 4530
50	50	35	23BK-1 4535
	50	40	23BK-1 4540
	50	45	23BK-1 4545
	50	50	23BK-1 4550
	50	55	23BK-1 4555
55	55	15	23BK-1 5015
	55	20	23BK-1 5020
	55	25	23BK-1 5025
55	55	30	23BK-1 5030
	55	35	23BK-1 5035
	55	40	23BK-1 5040
55	55	50	23BK-1 5050
	55	60	23BK-1 5060

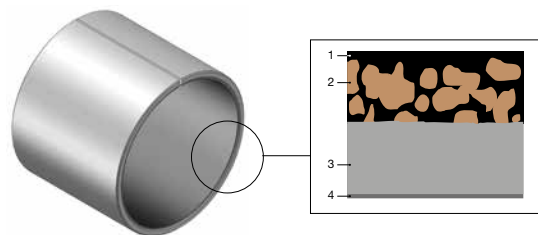
d	D	L	Reference
55	60	25	23BK-1 5525
	60	30	23BK-1 5530
	60	35	23BK-1 5535
60	60	40	23BK-1 5540
	60	50	23BK-1 5550
	60	55	23BK-1 5555
	60	60	23BK-1 5560
56	61	40	23BK-1 5640
60	65	15	23BK-1 6015
	65	20	23BK-1 6020
	65	30	23BK-1 6030
65	65	35	23BK-1 6035
	65	40	23BK-1 6040
	65	50	23BK-1 6050
65	65	60	23BK-1 6060
	65	70	23BK-1 6070
	65	70	23BK-1 6070
65	70	15	23BK-1 6515
	70	30	23BK-1 6530
	70	40	23BK-1 6540
70	70	50	23BK-1 6550
	70	60	23BK-1 6560
	70	70	23BK-1 6570
	75	30	23BK-1 7030
	75	35	23BK-1 7035
75	75	40	23BK-1 7040
	75	50	23BK-1 7050
	75	60	23BK-1 7060
75	75	70	23BK-1 7070
	75	80	23BK-1 7080





23BK-1

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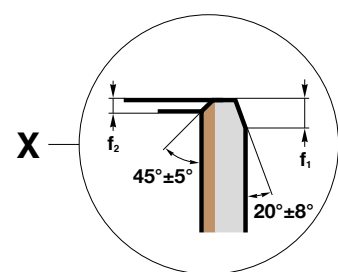
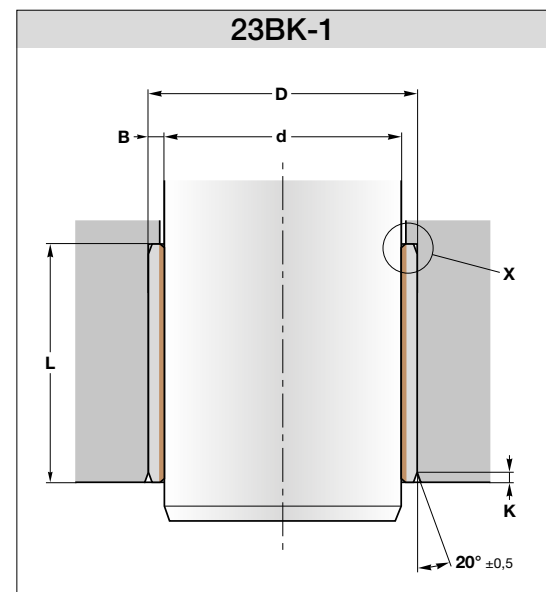
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Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
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In hydrodynamic working	5 m/s
<b>PV-factor</b>	
Continuously	1,8 N/mm <sup>2</sup> . m/s
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Shaft roughness	Ra < 0,4 µm
Shaft hardness	HB > 350

### Advantages

- For dry and maintenance-free applications
- Absorption of noise and vibrations
- Hydrodynamic applications possible
- High loads
- Good chemical resistance
- Low wear and friction
- No stick-slip
- High temperature range
- High sliding speed
- No water absorption
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.



D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

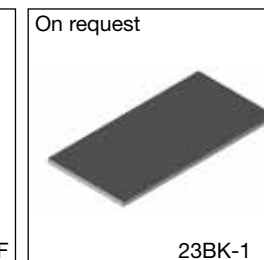
B	f1	f2
0,75	0,5	0,25
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

Tolerances			
	d	D	L
d ≤ 4	h6	H6	
4 < d < 80	f7	H7	± 0,25
d ≥ 80	h8	H7	

Friction coefficient	p N/mm <sup>2</sup>	v m/s
0,025	250-140	< 0,001
0,04-0,07	140-60	0,001-0,005
0,07-0,1	60-10	0,005-0,05
0,1-0,15	10-1	0,05-0,5
0,15-0,25	< 1	0,5-2

d	D	L	Reference
75	80	30	23BK-1 7530
	80	40	23BK-1 7540
	80	50	23BK-1 7550
80	80	60	23BK-1 7560
	80	80	23BK-1 7580
	85	40	23BK-1 8040
85	85	50	23BK-1 8050
	85	60	23BK-1 8060
	85	80	23BK-1 8080
85	85	100	23BK-1 80100
	90	40	23BK-1 8540
	90	50	23BK-1 8550
90	90	60	23BK-1 8560
	95	40	23BK-1 9040
	95	50	23BK-1 9050
90	95	60	23BK-1 9060
	95	78,5	23BK-1 9078.5
	95	90	23BK-1 9090
95	95	100	23BK-1 90100
	100	30	23BK-1 9530
	100	40	23BK-1 9540
100	105	50	23BK-1 10050
	105	60	23BK-1 10060
	105	70	23BK-1 10070
105	105	95	23BK-1 10095
	110	90	23BK-1 10590
	110	115	23BK-1 105115
110	115	50	23BK-1 11050
	115	60	23BK-1 11060
	115	100	23BK-1 110100
115	110	110	23BK-1 110110
	115	115	23BK-1 110115

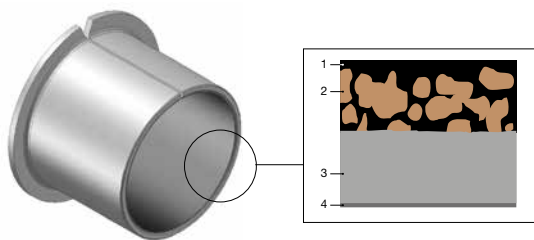
d	D	L	Reference
115	120	50	23BK-1 11550
	120	125	35 23BK-1 12035
	125	45	23BK-1 12045
120	125	50	23BK-1 12050
	125	60	23BK-1 12060
	125	70	23BK-1 12070
125	125	95	23BK-1 12095
	125	100	23BK-1 120100
	130	100	23BK-1 125100
130	135	50	23BK-1 13050
	135	60	23BK-1 13060
	135	80	23BK-1 13080
135	135	100	23BK-1 130100
	140	50	23BK-1 14050
	145	80	23BK-1 14080
140	145	100	23BK-1 140100
	150	50	23BK-1 15050
	155	60	23BK-1 15060
150	155	80	23BK-1 15080
	155	100	23BK-1 150100
	160	80	23BK-1 16080
160	165	100	23BK-1 160100
	180	100	23BK-1 180100
180	185	100	23BK-1 180100
	200	100	23BK-1 200100
200	205	100	23BK-1 200100
	250	100	23BK-1 250100
250	255	100	23BK-1 250100
	300	50	23BK-1 30050
300	305	100	23BK-1 300100





23BK-1...F

## Maintenance free rolled bushings



- 1 Modified PTFE: 0,01 -0,05 mm
- 2 Sintered bronze layer: 0,20 - 0,35 mm
- 3 Steel roll
- 4 Surface protection: ~0,002 mm

23BK-1...F are tri-layer maintenance-free flanged bushings with a base of low carbon steel, whereupon a porous bronze layer is sintered. After rolling process completed, PTFE is impregnated into the interstices of this bronze layer.

23BK-1...F self-lubricating flanged bushings offer very good wear and low friction performance even in dry running conditions and have good physical and mechanical properties, also certain chemical properties.

They are suitable for linear, rotating and oscillating movements.

### Technical specification

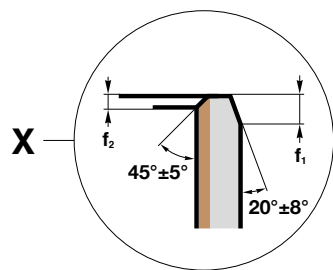
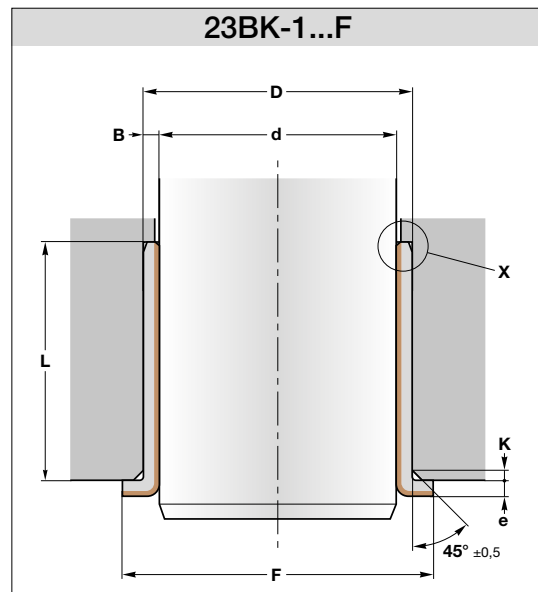
Temperature	- 195 to + 250°C
Friction coefficient	see table below
<b>Maximum load</b>	
Dynamic	140 N/mm <sup>2</sup>
Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
Dry	2,5 m/s
In hydrodynamic working	5 m/s
<b>PV-factor</b>	
Continuously	1,8 N/mm <sup>2</sup> . m/s
Temporarily	3,6 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,4 µm
Shaft hardness	HB > 350

### Advantages

- For dry and maintenance-free applications
- Absorption of noise and vibrations
- Hydrodynamic applications possible
- High loads
- Good chemical resistance
- Low wear and friction
- No stick-slip
- High temperature range
- High sliding speed
- No water absorption
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.

Friction coefficient	p N/mm <sup>2</sup>	v m/s
0,025	250-140	< 0,001
0,04-0,07	140-60	0,001-0,005
0,07-0,1	60-10	0,005-0,05
0,1-0,15	10-1	0,05-0,5
0,15-0,25	< 1	0,5-2



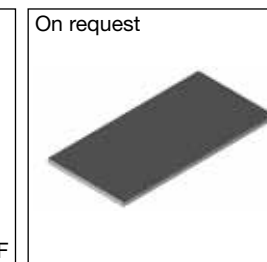
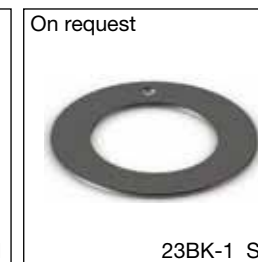
D	K
< 50	0,8 ±0,3
50 < 150	1,5 ±0,5
> 150	2,5 ±1

B	f1	f2
0,75	0,5	0,25
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

Tolerances				
d	D	L	e	F
f7	H7	± 0,25	0/-0,2	± 0,5

d	D	L	e	F	Reference
6	8	4	1	12	23BK-1 06040F
	8	7	1	12	23BK-1 06070F
	8	8	1	12	23BK-1 06080F
8	10	5,5	1	15	23BK-1 08055F
	10	7,5	1	15	23BK-1 08075F
	10	9,5	1	15	23BK-1 08095F
10	12	7	1	18	23BK-1 10070F
	12	9	1	18	23BK-1 10090F
	12	12	1	18	23BK-1 10120F
12	14	7	1	20	23BK-1 12070F
	14	9	1	20	23BK-1 12090F
14	16	12	1	22	23BK-1 14120F
	16	17	1	22	23BK-1 14170F
	16	17	1	22	23BK-1 14170F
15	17	9	1	23	23BK-1 15090F
	17	12	1	23	23BK-1 15120F
	17	17	1	23	23BK-1 15170F
16	18	12	1	24	23BK-1 16120F
	18	17	1	24	23BK-1 16170F

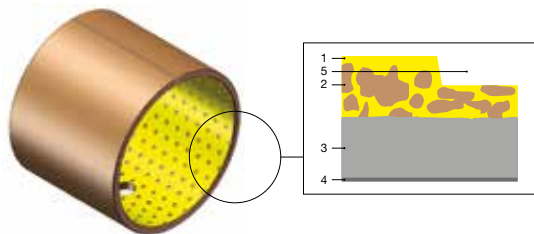
d	D	L	e	F	Reference
18	20	12	1	26	23BK-1 18120F
	20	17	1	26	23BK-1 18170F
20	23	11,5	1,5	31	23BK-1 20115F
	23	16,5	1,5	31	23BK-1 20165F
	23	21,5	1,5	31	23BK-1 20215F
25	28	11,5	1,5	36	23BK-1 25115F
	28	16,5	1,5	36	23BK-1 25165F
	28	21,5	1,5	36	23BK-1 25215F
30	34	16	2	42	23BK-1 30160F
	34	26	2	42	23BK-1 30260F
35	39	16	2	47	23BK-1 35160F
	39	26	2	47	23BK-1 35260F
40	44	26	2	53	23BK-1 40260F
45	50	42,5	2,5	60	23BK-1 45425F
60	65	30	2,5	75	23BK-1 60300F





# 23BK-2

## Low maintenance rolled bushings



**23BK-2** are tri-layer low maintenance bushings with a base of low carbon steel, whereupon a porous bronze layer is sintered. After rolling process completed, Acetalcopolymer (POM) is impregnated into the interstices of this bronze layer. Grease indents are stamped in the sliding layer.

**23BK-2** needs to be greased or oiled and offer optimum performance under relatively high loads and low speeds and have good physical and mechanical properties.

They are suitable for rotating and oscillating movements.

### Technical specification

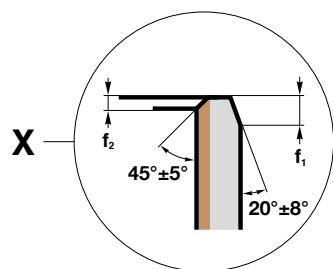
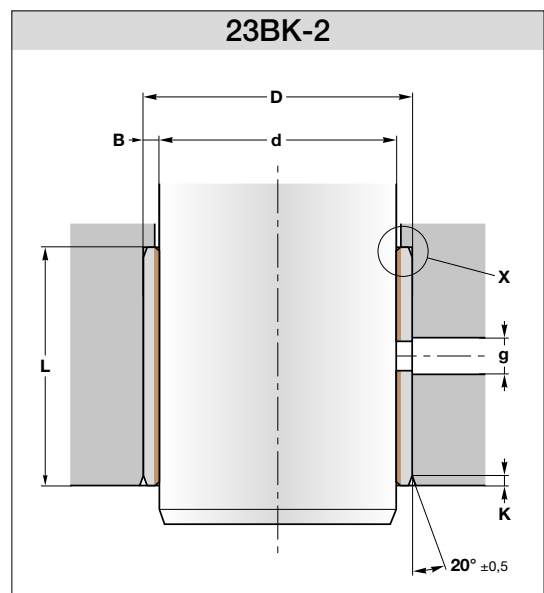
Temperature	- 40 to + 110°C
Friction coefficient	0,04 to 0,2
<b>Maximum load</b>	
Dynamic	120 N/mm <sup>2</sup>
Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
Dry	0,5 m/s
In hydrodynamic working	2,5 m/s
<b>PV-factor</b>	
Continuously	2,8 N/mm <sup>2</sup> . m/s
Temporarily	22 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,8 µm
Shaft hardness	HB > 150

### Advantages

- Absorption of noise and vibrations
- Re-lubrication possible
- Hydrodynamic applications possible
- High loads
- Low wear and friction
- No water absorption
- To be used when it is difficult to bring in an oil film
- Low clearance during operation
- Limited dimensions

**Please contact us for applications approaching maximum values.**

- 1 Acetal co-polymer: 0,30 – 0,50 mm
- 2 Porous bronze layer: 0,20 – 0,35 mm
- 3 Steel roll
- 4 Surface protection: ~0,002 mm
- 5 Lubrication pockets



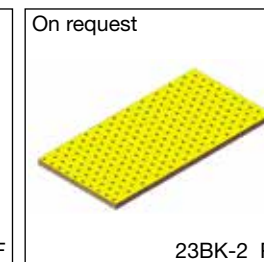
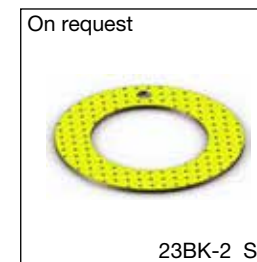
D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

Tolerances		
d	D	L
h7 - h8	H7	± 0,25

d	D	L	g	Reference
8	10	8	4	23BK-2 0808
	10	10	4	23BK-2 0810
10	12	10	4	23BK-2 1010
	12	15	4	23BK-2 1015
	12	20	4	23BK-2 1020
12	14	6	4	23BK-2 1206
	14	10	4	23BK-2 1210
	14	12	4	23BK-2 1212
	14	15	4	23BK-2 1215
14	14	16	4	23BK-2 1216
	14	20	4	23BK-2 1220
	16	15	4	23BK-2 1415
	16	20	4	23BK-2 1420
15	16	25	4	23BK-2 1425
	17	10	4	23BK-2 1510
	17	15	4	23BK-2 1515
16	17	25	4	23BK-2 1525
	18	15	4	23BK-2 1615
	18	20	4	23BK-2 1620
18	18	25	4	23BK-2 1625
	20	15	4	23BK-2 1815
	20	20	4	23BK-2 1820
20	20	25	4	23BK-2 1825
	23	10	4	23BK-2 2010
	23	15	4	23BK-2 2015
22	23	20	4	23BK-2 2020
	23	25	4	23BK-2 2025
	23	30	4	23BK-2 2030
25	25	15	6	23BK-2 2215
	25	20	6	23BK-2 2220
	25	25	6	23BK-2 2225
	25	30	6	23BK-2 2230

d	D	L	g	Reference
24	27	15	6	23BK-2 2415
	27	20	6	23BK-2 2420
	27	25	6	23BK-2 2425
25	27	30	6	23BK-2 2430
	28	15	6	23BK-2 2515
28	28	20	6	23BK-2 2520
	28	25	6	23BK-2 2525
	28	30	6	23BK-2 2530
30	32	25	6	23BK-2 2825
	32	30	6	23BK-2 2830
32	34	15	6	23BK-2 3015
	34	20	6	23BK-2 3020
	34	25	6	23BK-2 3025
35	34	30	6	23BK-2 3030
	34	40	6	23BK-2 3040
	36	25	6	23BK-2 3225
40	36	30	6	23BK-2 3230
	36	40	6	23BK-2 3240
	39	20	6	23BK-2 3520
45	39	30	6	23BK-2 3530
	39	35	6	23BK-2 3535
	39	40	6	23BK-2 3540
50	39	50	6	23BK-2 3550
	44	20	8	23BK-2 4020
	44	30	8	23BK-2 4030
50	44	40	8	23BK-2 4040
	44	50	8	23BK-2 4050
	50	30	8	23BK-2 4530
50	50	40	8	23BK-2 4540
	50	45	8	23BK-2 4545
50	50	8	23BK-2 4550	

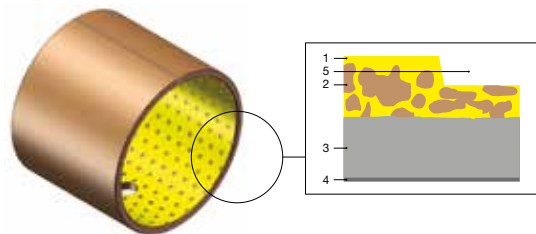






23BK-2

## Low maintenance rolled bushings



- 1 Acetal co-polymer: 0,30 – 0,50 mm
- 2 Porous bronze layer: 0,20 – 0,35 mm
- 3 Steel roll
- 4 Surface protection: ~0,002 mm
- 5 Lubrication pockets

**23BK-2** are tri-layer low maintenance bushings with a base of low carbon steel, whereupon a porous bronze layer is sintered. After rolling process completed, Acetalcopolymer (POM) is impregnated into the interstices of this bronze layer. Grease indents are stamped in the sliding layer.

**23BK-2** needs to be greased or oiled and offer optimum performance under relatively high loads and low speeds and have good physical and mechanical properties.

They are suitable for rotating and oscillating movements.

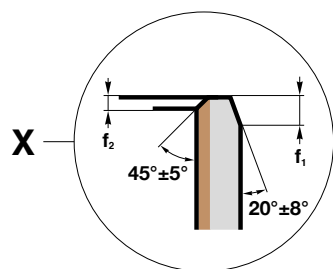
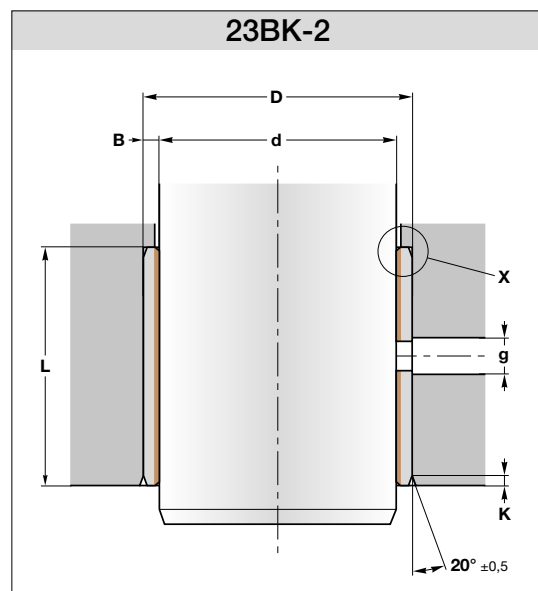
### Technical specification

Temperature	- 40 to + 110°C
Friction coefficient	0,04 to 0,2
<b>Maximum load</b>	
Dynamic	120 N/mm <sup>2</sup>
Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
Dry	0,5 m/s
In hydrodynamic working	2,5 m/s
<b>PV-factor</b>	
Continuously	2,8 N/mm <sup>2</sup> . m/s
Temporarily	22 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,8 µm
Shaft hardness	HB > 150

### Advantages

- Absorption of noise and vibrations
- Re-lubrication possible
- Hydrodynamic applications possible
- High loads
- Low wear and friction
- No water absorption
- To be used when it is difficult to bring in an oil film
- Low clearance during operation
- Limited dimensions

**Please contact us for applications approaching maximum values.**



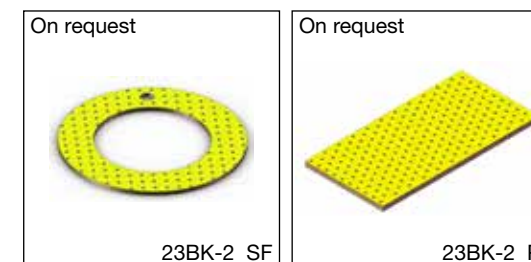
D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

Tolerances		
d	D	L
h7 - h8	H7	± 0,25

d	D	L	g	Reference
50	55	20	8	23BK-2 5020
	55	25	8	23BK-2 5025
	55	30	8	23BK-2 5030
55	55	35	8	23BK-2 5035
	55	40	8	23BK-2 5040
	55	45	8	23BK-2 5045
	55	50	8	23BK-2 5050
55	55	60	8	23BK-2 5060
	55	60	8	23BK-2 5060
55	60	25	8	23BK-2 5525
	60	40	8	23BK-2 5540
	60	60	8	23BK-2 5560
56	61	40	8	23BK-2 5640
	65	30	8	23BK-2 6030
	65	40	8	23BK-2 6040
65	65	50	8	23BK-2 6050
	65	60	8	23BK-2 6060
65	65	70	8	23BK-2 6070
	65	70	8	23BK-2 6070
65	70	30	8	23BK-2 6530
	70	40	8	23BK-2 6540
	70	50	8	23BK-2 6550
70	70	60	8	23BK-2 6560
	70	70	8	23BK-2 6570
	75	30	8	23BK-2 7030
75	75	40	8	23BK-2 7040
	75	45	8	23BK-2 7045
75	75	50	8	23BK-2 7050
	75	60	8	23BK-2 7060
	75	65	8	23BK-2 7065
75	75	70	8	23BK-2 7070
	75	80	8	23BK-2 7080

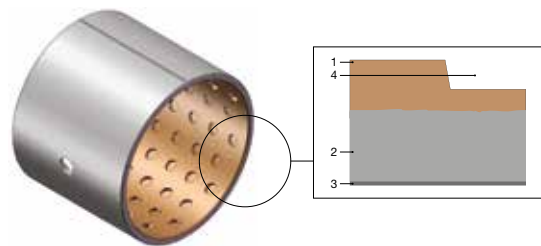
d	D	L	g	Reference
75	80	40	9,5	23BK-2 7540
	80	60	9,5	23BK-2 7560
	80	80	9,5	23BK-2 7580
80	85	40	9,5	23BK-2 8040
	85	50	9,5	23BK-2 8050
	85	60	9,5	23BK-2 8060
	85	80	9,5	23BK-2 8080
85	90	40	9,5	23BK-2 8540
	90	45	9,5	23BK-2 8545
	90	60	9,5	23BK-2 8560
90	95	40	9,5	23BK-2 9040
	95	60	9,5	23BK-2 9060
	95	80	9,5	23BK-2 9080
95	95	90	9,5	23BK-2 9090
	100	60	9,5	23BK-2 9560
	100	70	9,5	23BK-2 9570
100	100	90	9,5	23BK-2 9590
	105	50	9,5	23BK-2 10050
105	105	60	9,5	23BK-2 10060
	115	60	9,5	23BK-2 11060
110	115	80	9,5	23BK-2 11080
	115	100	9,5	23BK-2 110110
	125	60	9,5	23BK-2 12060
120	125	80	9,5	23BK-2 12080
	125	100	9,5	23BK-2 120100
130	135	60	9,5	23BK-2 13060
	135	80	9,5	23BK-2 13080
150	155	50	9,5	23BK-2 15050
	155	100	9,5	23BK-2 150100





23BK-3

### Bi-metallic rolled bushings



- 1 Bronze
- 2 Steel
- 3 Surface protection
- 4 Lubrication pockets

23BK-3 bi-metallic bushings are formed from steel strips with alloy lining material in bronze CuPb10Sn10. In the bronze alloy sliding layer are circular lubrication pockets machined allowing long-term lubrication.

23BK-3 are suitable for medium loads at mid-high speed rotation or oscillating movement.

#### Technical specification

Temperature - 40 to + 150°C  
Friction coefficient 0,05 to 0,15

#### Maximum load

Dynamic 140 N/mm<sup>2</sup>  
Static 250 N/mm<sup>2</sup>

#### Maximum speed

With grease 2,5 m/s  
With oil 10 m/s

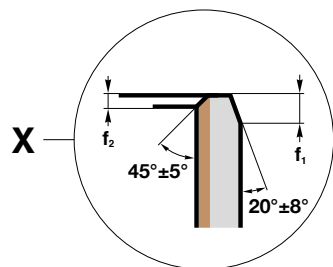
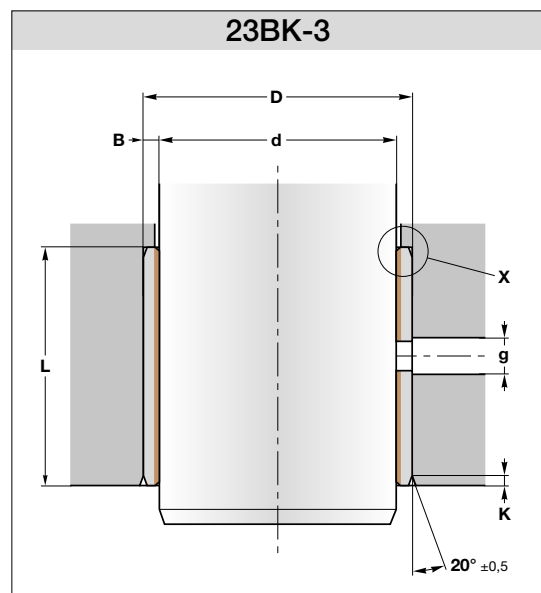
#### PV-factor

With grease 2,8 N/mm<sup>2</sup>. m/s  
With oil 10 N/mm<sup>2</sup>. m/s  
Shaft roughness Ra < 0,8 µm  
Shaft hardness HB > 400

#### Advantages

- For low speed oscillation application
- Absorption of noise and vibrations
- Re-lubrication possible
- Hydrodynamic applications possible
- High loads
- Low wear and friction
- High sliding speed
- To be used when it is difficult to bring in an oil film
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.



D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

#### Tolerances

d	D	L
h7 - h8	H7	± 0,25

d	D	L	g	Reference
---	---	---	---	-----------

10 12 10 4 23BK-3 1010  
12 15 4 23BK-3 1015

12 14 10 4 23BK-3 1210  
14 15 4 23BK-3 1215  
14 20 4 23BK-3 1220

14 16 15 4 23BK-3 1415  
16 20 4 23BK-3 1420  
16 25 4 23BK-3 1425

15 17 15 4 23BK-3 1515  
17 20 4 23BK-3 1520  
17 25 4 23BK-3 1525

16 18 15 4 23BK-3 1615  
18 20 4 23BK-3 1620  
18 25 4 23BK-3 1625

18 21 15 4 23BK-3 1815  
21 20 4 23BK-3 1820  
21 25 4 23BK-3 1825

20 23 10 4 23BK-3 2010  
23 15 4 23BK-3 2015  
23 20 4 23BK-3 2020

23 25 4 23BK-3 2025  
23 30 4 23BK-3 2030

22 25 15 6 23BK-3 2215  
25 20 6 23BK-3 2220  
25 25 6 23BK-3 2225

25 30 6 23BK-3 2230

25 28 15 6 23BK-3 2515  
28 20 6 23BK-3 2520  
28 25 6 23BK-3 2525

28 28 30 6 23BK-3 2530

28 32 20 6 23BK-3 2820  
32 25 6 23BK-3 2825  
32 30 6 23BK-3 2830

30 34 20 6 23BK-3 3020  
34 25 6 23BK-3 3025  
34 30 6 23BK-3 3030

34 40 6 23BK-3 3040

d	D	L	g	Reference
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32 36 20 6 23BK-3 3220  
36 25 6 23BK-3 3225  
36 30 6 23BK-3 3230

36 40 6 23BK-3 3240

35 39 15 6 23BK-3 3515  
39 20 6 23BK-3 3520  
39 25 6 23BK-3 3525

39 30 6 23BK-3 3530  
39 35 6 23BK-3 3535  
39 40 6 23BK-3 3540

39 50 6 23BK-3 3550

40 44 20 8 23BK-3 4020  
44 25 8 23BK-3 4025  
44 30 8 23BK-3 4030

44 40 8 23BK-3 4040  
44 50 8 23BK-3 4050

45 50 20 8 23BK-3 4520  
50 25 8 23BK-3 4525  
50 30 8 23BK-3 4530

50 40 8 23BK-3 4540  
50 45 8 23BK-3 4545  
50 50 8 23BK-3 4550

50 50 60 8 23BK-3 4560  
50 63 8 23BK-3 4563  
50 70 8 23BK-3 4570

50 55 30 8 23BK-3 5030  
55 40 8 23BK-3 5040  
55 50 8 23BK-3 5050

55 60 8 23BK-3 5060

55 60 20 8 23BK-3 5520  
60 40 8 23BK-3 5540  
60 50 8 23BK-3 5550

60 60 8 23BK-3 5560

60 65 30 8 23BK-3 6030  
65 35 8 23BK-3 6035  
65 40 8 23BK-3 6040

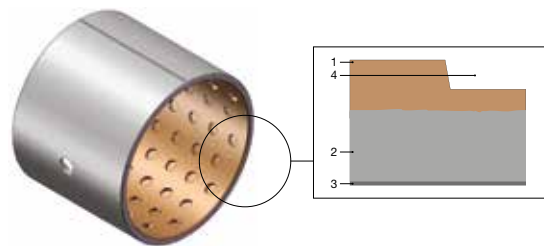
65 45 8 23BK-3 6045  
65 50 8 23BK-3 6050  
65 60 8 23BK-3 6060

65 70 8 23BK-3 6070



23BK-3

### Bi-metallic rolled bushings



- 1 Bronze
- 2 Steel
- 3 Surface protection
- 4 Lubrication pockets

23BK-3 bi-metallic bushings are formed from steel strips with alloy lining material in bronze CuPb10Sn10. In the bronze alloy sliding layer are circular lubrication pockets machined allowing long-term lubrication.

23BK-3 are suitable for medium loads at mid-high speed rotation or oscillating movement.

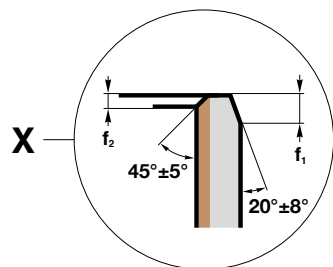
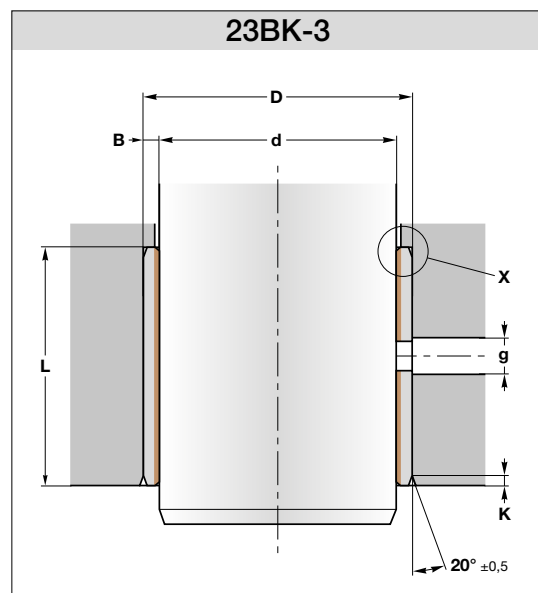
#### Technical specification

Temperature	- 40 to + 150°C
Friction coefficient	0,05 to 0,15
<b>Maximum load</b>	
Dynamic	140 N/mm <sup>2</sup>
Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
With grease	2,5 m/s
With oil	10 m/s
<b>PV-factor</b>	
With grease	2,8 N/mm <sup>2</sup> . m/s
With oil	10 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,8 µm
Shaft hardness	HB > 400

#### Advantages

- For low speed oscillation application
- Absorption of noise and vibrations
- Re-lubrication possible
- Hydrodynamic applications possible
- High loads
- Low wear and friction
- High sliding speed
- To be used when it is difficult to bring in an oil film
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.



D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

#### Tolerances

d	D	L
h7 - h8	H7	± 0,25

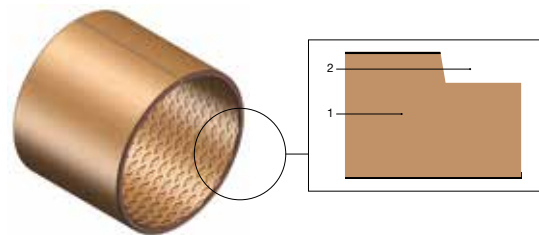
d	D	L	g	Reference
65	70	40	8	23BK-3 6540
	70	50	8	23BK-3 6550
	70	60	8	23BK-3 6560
70	70	70	8	23BK-3 6570
	75	40	8	23BK-3 7040
	75	50	8	23BK-3 7050
75	75	60	8	23BK-3 7060
	75	65	8	23BK-3 7065
	75	70	8	23BK-3 7070
75	75	80	8	23BK-3 7080
	80	40	9,5	23BK-3 7540
	80	50	9,5	23BK-3 7550
80	80	60	9,5	23BK-3 7560
	80	80	9,5	23BK-3 7580
	85	40	9,5	23BK-3 8040
80	85	50	9,5	23BK-3 8050
	85	60	9,5	23BK-3 8060
	85	80	9,5	23BK-3 8080
85	85	100	9,5	23BK-3 80100
	90	40	9,5	23BK-3 8540
	90	60	9,5	23BK-3 8560
90	90	80	9,5	23BK-3 8580
	90	100	9,5	23BK-3 85100
	95	40	9,5	23BK-3 9040
90	95	50	9,5	23BK-3 9050
	95	60	9,5	23BK-3 9060
	95	70	9,5	23BK-3 9070
95	95	75	9,5	23BK-3 9075
	95	80	9,5	23BK-3 9080
	95	90	9,5	23BK-3 9090
95	100	60	9,5	23BK-3 9560
100	105	50	9,5	23BK-3 10050
	105	60	9,5	23BK-3 10060
	105	80	9,5	23BK-3 10080
105	105	95	9,5	23BK-3 10095
	110	60	9,5	23BK-3 11060

d	D	L	g	Reference	
115	120	50	9,5	23BK-3 11550	
	120	125	25	9,5	23BK-3 12025
	125	50	9,5	23BK-3 12050	
120	125	100	9,5	23BK-3 120100	
	130	135	60	9,5	23BK-3 13060
	135	100	9,5	23BK-3 130100	
140	145	100	9,5	23BK-3 140100	
150	155	30	9,5	23BK-3 15030	
	155	60	9,5	23BK-3 15060	
	155	100	9,5	23BK-3 150100	
160	165	100	9,5	23BK-3 160100	
170	175	60	9,5	23BK-3 17060	
180	185	60	9,5	23BK-3 18060	
	185	100	9,5	23BK-3 180100	
	245	250	50	9,5	23BK-3 24550
245	250	60	9,5	23BK-3 24560	



23BK090

## Bronze wrapped rolled bushings



- 1 Bronze
- 2 Lubrication pockets

23BK090 bronze wrapped bushings are entirely made of bronze CuSn8.

They are fitted with diamond shaped lubrication indents on the bearing surface.

The indents serve as lubricant reservoirs to rapidly build up a lubricating film at the start of movement, allowing to reduce the running friction, resulting in an excellent and prolonged operation.

These bronze bearings have been developed for **high-load applications at lower speeds** and are especially suited for oscillating movements. They are perfect for polluted working conditions such as in the construction or agricultural industries.

### Technical specification

Temperature - 100 to + 150°C  
Friction coefficient 0,08 to 0,25

#### Maximum load

Dynamic 40 N/mm<sup>2</sup>  
Static 120 N/mm<sup>2</sup>

#### Maximum speed

With grease 2 m/s  
In hydrodynamic working > 2 m/s

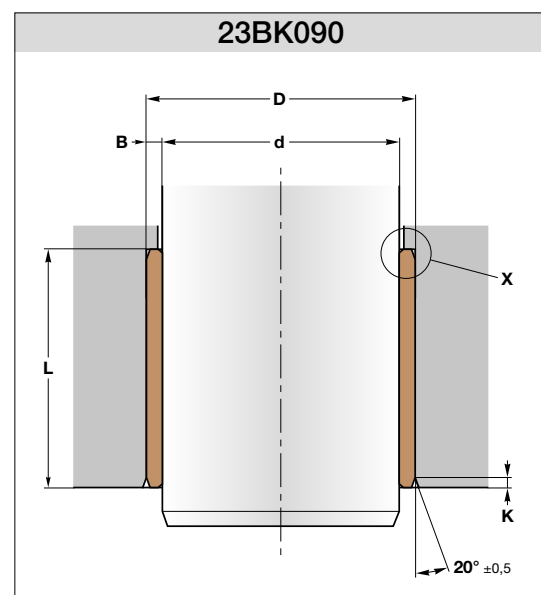
#### PV-factorwith

Grease 2,8 N/mm<sup>2</sup>. m/s  
In hydrodynamic working 10 N/mm<sup>2</sup>. m/s  
Shaft roughness Ra < 0,8 µm  
Shaft hardness HB > 400

### Advantages

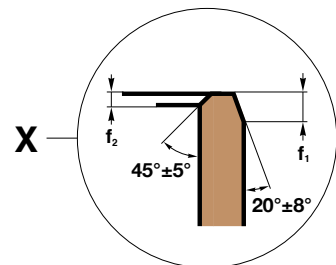
- Maintenance-free applications
- Re-lubrication possible
- Suitable for contaminated environments
- Shock and vibration proof
- Good wear resistance
- Good corrosion resistance
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.



D	K
< 50	0,8 ±0,3
50 < 150	1,5 ±0,5
> 150	2,5 ±1

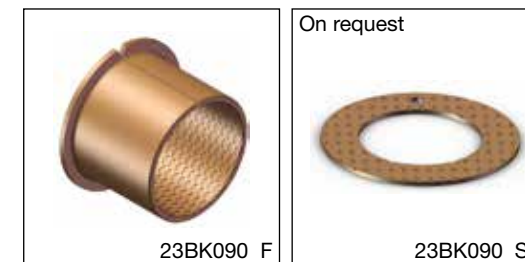
B	f1	f2
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6



Tolerances		
d	D	L
h7 - h8	H7	± 0,25

d	D	L	Reference
10	12	10	23BK090 1010
	12	15	23BK090 1015
12	14	10	23BK090 1210
	14	15	23BK090 1215
14	16	15	23BK090 1415
	16	20	23BK090 1420
	16	25	23BK090 1425
15	17	15	23BK090 1515
	17	20	23BK090 1520
	17	25	23BK090 1525
16	18	15	23BK090 1615
	18	20	23BK090 1620
	18	25	23BK090 1625
18	21	15	23BK090 1815
	21	20	23BK090 1820
	21	25	23BK090 1825
20	23	10	23BK090 2010
	23	15	23BK090 2015
	23	20	23BK090 2020
23	23	25	23BK090 2025
	23	30	23BK090 2030
	22	25	15
25		20	23BK090 2220
25		25	23BK090 2225
25	25	30	23BK090 2230
	28	15	23BK090 2515
	28	20	23BK090 2520
28	28	25	23BK090 2525
	28	30	23BK090 2530
	28	31	15
31		20	23BK090 2820
31		25	23BK090 2825
31	31	30	23BK090 2830
	32	20	23BK090 2820/1
30	34	20	23BK090 3020
	34	25	23BK090 3025
	34	30	23BK090 3030
34	34	40	23BK090 3040

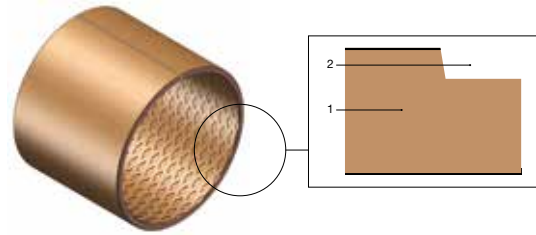
d	D	L	Reference	
32	36	20	23BK090 3220	
	36	30	23BK090 3230	
	36	40	23BK090 3240	
35	39	15	23BK090 3515	
	39	20	23BK090 3520	
	39	25	23BK090 3525	
39	39	30	23BK090 3530	
	39	35	23BK090 3535	
	39	40	23BK090 3540	
39	39	50	23BK090 3550	
	40	20	23BK090 4020	
40	44	25	23BK090 4025	
	44	30	23BK090 4030	
	44	40	23BK090 4040	
44	44	50	23BK090 4050	
	45	50	20	23BK090 4520
50		25	23BK090 4525	
50		30	23BK090 4530	
50	50	40	23BK090 4540	
	50	45	23BK090 4545	
	50	50	23BK090 4550	
50	50	60	23BK090 4560	
	55	55	30	23BK090 5030
		55	40	23BK090 5040
55		50	23BK090 5050	
55	55	60	23BK090 5060	
	60	60	20	23BK090 5520
		60	40	23BK090 5540
60		50	23BK090 5550	
60	60	60	23BK090 5560	





23BK090

## Bronze wrapped rolled bushings



1 Bronze  
2 Lubrication pockets

23BK090 bronze wrapped bushings are entirely made of bronze CuSn8.

They are fitted with diamond shaped lubrication indents on the bearing surface.

The indents serve as lubricant reservoirs to rapidly build up a lubricating film at the start of movement, allowing to reduce the running friction, resulting in an excellent and prolonged operation.

These bronze bearings have been developed for **high-load applications at lower speeds** and are especially suited for oscillating movements. They are perfect for polluted working conditions such as in the construction or agricultural industries.

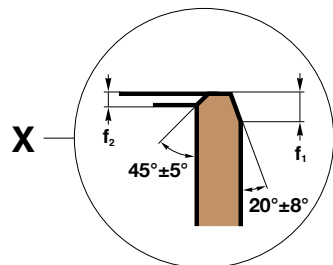
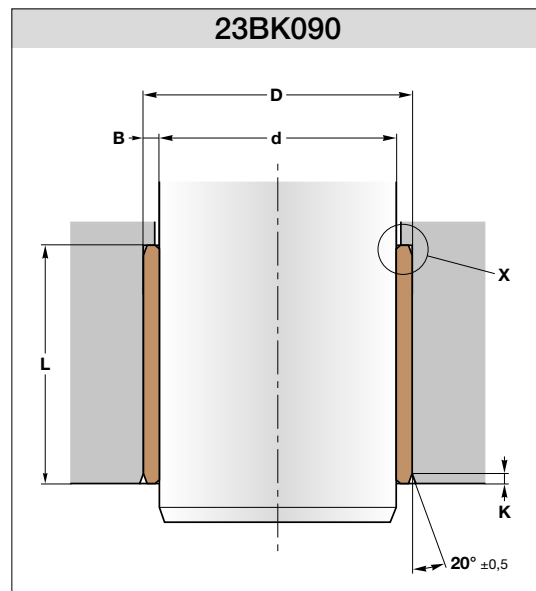
### Technical specification

Temperature	- 100 to + 150°C
Friction coefficient	0,08 to 0,25
<b>Maximum load</b>	
Dynamic	40 N/mm <sup>2</sup>
Static	120 N/mm <sup>2</sup>
<b>Maximum speed</b>	
With grease	2 m/s
In hydrodynamic working	> 2 m/s
<b>PV-factorwith</b>	
Grease	2,8 N/mm <sup>2</sup> . m/s
In hydrodynamic working	10 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,8 µm
Shaft hardness	HB > 400

### Advantages

- Maintenance-free applications
- Re-lubrication possible
- Suitable for contaminated environments
- Shock and vibration proof
- Good wear resistance
- Good corrosion resistance
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.



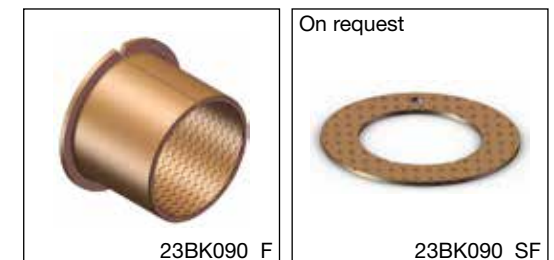
D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

Tolerances		
d	D	L
h7 - h8	H7	± 0,25

d	D	L	Reference	
58	63	30	23BK090 5830	
	60	65	30	23BK090 6030
		65	35	23BK090 6035
65	65	40	23BK090 6040	
	65	45	23BK090 6045	
	65	50	23BK090 6050	
65	65	60	23BK090 6060	
	70	40	23BK090 6540	
	70	50	23BK090 6550	
65	70	60	23BK090 6560	
	70	70	23BK090 6570	
	70	75	40	23BK090 7040
75		50	23BK090 7050	
75		60	23BK090 7060	
75	75	70	23BK090 7070	
	75	80	23BK090 7080	
	75	80	40	23BK090 7540
80		60	23BK090 7560	
80		80	23BK090 7580	
80	85	40	23BK090 8040	
	85	50	23BK090 8050	
	85	60	23BK090 8060	
85	85	80	23BK090 8080	
	85	90	40	23BK090 8540
		90	80	23BK090 8580
90	95	40	23BK090 9040	
	95	50	23BK090 9050	
	95	60	23BK090 9060	
95	95	80	23BK090 9080	
	95	90	23BK090 9090	
95	100	60	23BK090 9560	

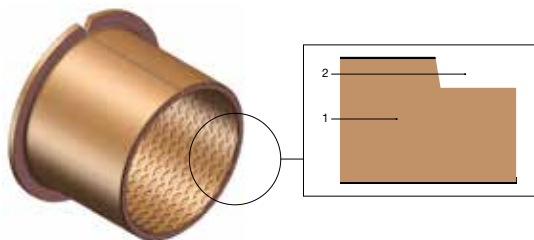
d	D	L	Reference
100	105	50	23BK090 10050
	105	60	23BK090 10060
	105	80	23BK090 10080
110	105	95	23BK090 10095
	115	60	23BK090 11060
	120	125	25
125		50	23BK090 12050
125		100	23BK090 120100
130	135	60	23BK090 13060
	135	100	23BK090 130100
140	145	100	23BK090 140100
150	155	30	23BK090 15030
	155	60	23BK090 15060
	155	80	23BK090 15080
155	155	100	23BK090 150100
	160	165	100
170		175	60
	180	185	60
185		100	23BK090 180100
240		245	100





23BK090...F

## Bronze wrapped rolled bushings



- 1 Bronze
- 2 Lubrication pockets

23BK090...F bronze wrapped flanged bushings are entirely made of bronze CuSn8.

They are fitted with diamond shaped lubrication indents on the bearing surface.

The indents serve as lubricant reservoirs to rapidly build up a lubricating film at the start of movement, allowing to reduce the running friction, resulting in an excellent and prolonged operation.

These bronze bearings have been developed for **high-load applications at lower speeds** and are especially suited for oscillating movements. They are perfect for polluted working conditions such as in the construction or agricultural industries.

### Technical specification

Temperature - 100 to + 150°C  
 Friction coefficient 0,08 to 0,25

#### Maximum load

Dynamic 40 N/mm<sup>2</sup>  
 Static 120 N/mm<sup>2</sup>

#### Maximum speed

With grease 2 m/s  
 In hydrodynamic working > 2 m/s

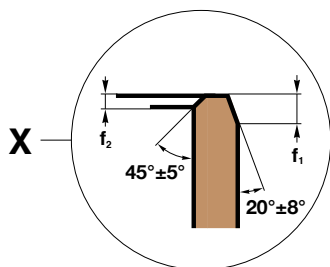
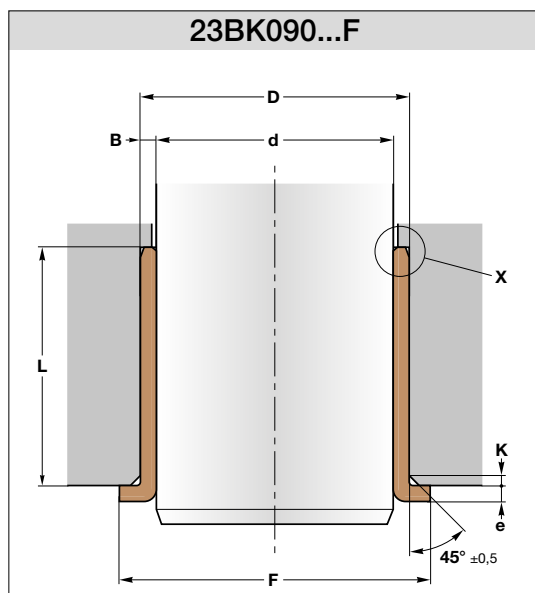
#### PV-factorwith

Grease 2,8 N/mm<sup>2</sup>. m/s  
 In hydrodynamic working 10 N/mm<sup>2</sup>. m/s  
 Shaft roughness Ra < 0,8 µm  
 Shaft hardness HB > 400

### Advantages

- Maintenance-free applications
- Re-lubrication possible
- Suitable for contaminated environments
- Shock and vibration proof
- Good wear resistance
- Good corrosion resistance
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.



D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

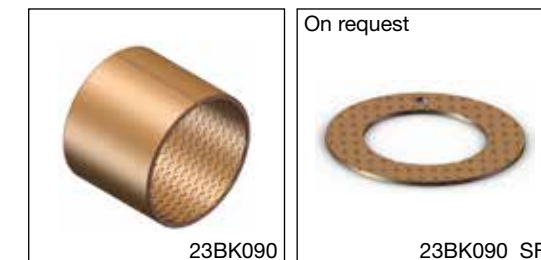
B	f1	f2
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

### Tolerances

d	D	L	e	F
f7	H7	± 0,25	0/-0,2	± 0,5

d	D	L	e	F	Reference
30	34	30	2	45	23BK090 3030F
35	39	20	2	50	23BK090 3520F
	39	35	2	50	23BK090 3535F
40	44	40	2	55	23BK090 4040F
45	50	30	2,5	60	23BK090 4530F
	50	45	2,5	60	23BK090 4545F
50	55	30	2,5	65	23BK090 5030F
	55	50	2,5	65	23BK090 5050F
55	60	30	2,5	70	23BK090 5530F
	60	50	2,5	70	23BK090 5550F

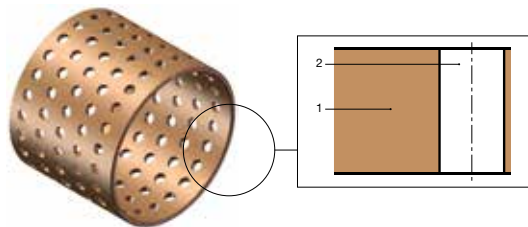
d	D	L	e	F	Reference
60	65	30	2,5	75	23BK090 6030F
65	70	30	2,5	80	23BK090 6530F
	70	60	2,5	80	23BK090 6560F
70	75	40	2,5	85	23BK090 7040F
	75	60	2,5	85	23BK090 7060F
	75	70	2,5	85	23BK090 7070F
80	85	40	2,5	100	23BK090 8040F
	85	80	2,5	100	23BK090 8080F
110	115	50	2,5	130	23BK090 11050F
120	125	50	2,5	140	23BK090 12050F
	75	70	2,5	85	23BK090 7070F





23FT090

## Long term lubrication bronze bushings



1 Bronze  
2 Holes

23FT090 is deriving from 23BK090. The difference between the two is that the indentations are replaced by through holes. The difference between both is, that the indentations are substituted by through-holes. These holes allow a larger capacity to collect lubricant, which build up a lubrication film at the start of movement and reduce the friction.

It is suitable for high load, lower speed application like construction, Transport, and agriculture machinery.

These bronze bearings have been developed for **high-load applications at lower speeds**. They are perfect for polluted working conditions such as in the construction or agricultural industries.

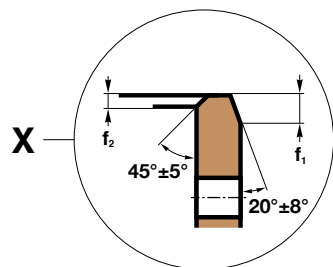
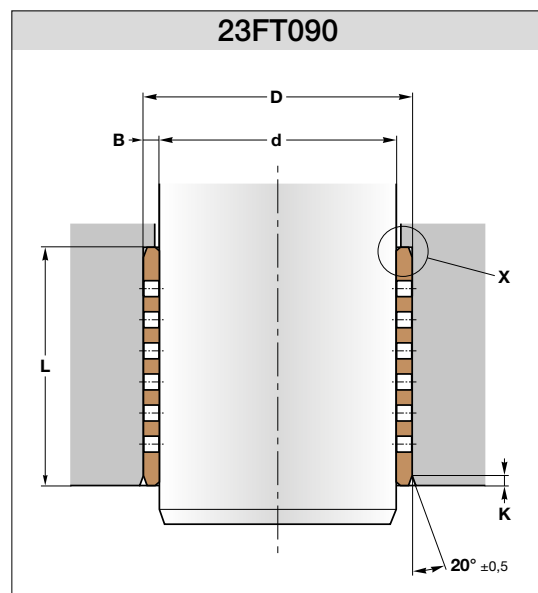
### Technical specification

Temperature	- 100 to + 250°C
Friction coefficient	0,08 to 0,25
<b>Maximum load</b>	
Dynamic	40 N/mm <sup>2</sup>
Static	120 N/mm <sup>2</sup>
<b>Maximum speed</b>	
With grease	2 m/s
In hydrodynamic working	> 2 m/s
<b>PV-factor</b>	
With grease	2,8 N/mm <sup>2</sup> . m/s
In hydrodynamic working	10 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,8 µm
Shaft hardness	HB > 400

### Advantages

- Maintenance-free applications
- Re-lubrication possible
- Suitable for contaminated environments
- Shock and vibration proof
- Good wear resistance
- Good corrosion resistance
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.



D	K
< 50	0,8 ± 0,3
50 < 150	1,5 ± 0,5
> 150	2,5 ± 1

B	f1	f2
1	0,6	0,3
1,5	0,6	0,4
2	1,2	0,4
2,5	1,8	0,6

### Tolerances

d	D	L
h8	H7	± 0,25

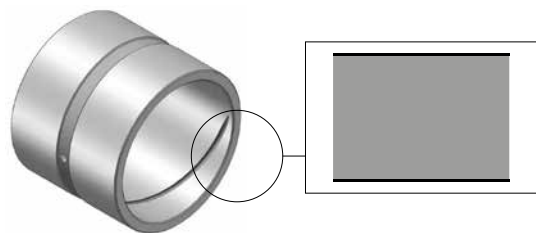
d	D	L	Reference
16	18	15	23FT090 1615
20	23	30	23FT090 2030
30	34	15	23FT090 3015
	34	20	23FT090 3020
	34	25	23FT090 3025
	34	30	23FT090 3030
40	34	40	23FT090 3040
	34	50	23FT090 3050
	44	25	23FT090 4025
40	44	30	23FT090 4030
	44	40	23FT090 4040
	44	50	23FT090 4050
60	65	40	23FT090 6040
	65	50	23FT090 6050
	65	60	23FT090 6060
	65	70	23FT090 6070





23HST

### Hardened steel bushings



Hardened steel

23HST is a line of steel bushings that undergo case-hardening and tempering treatment with casehardening depth of 0.8-1 mm and Hardness HRC 58-62.

The smoothness obtained by this treatment reduces the friction factor and consequently makes the bush more efficient.

The use of these bushes, after an initial greasing cycle, enables a lubrication interval of up to 550 h. max. (the interval varies based on the working conditions).

Each bush is traceable and identifiable thanks to the indelible marking on each piece, which identifies the lot.

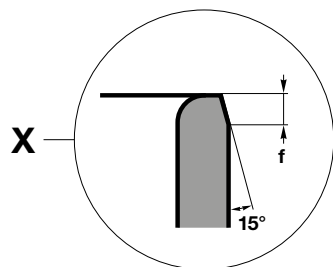
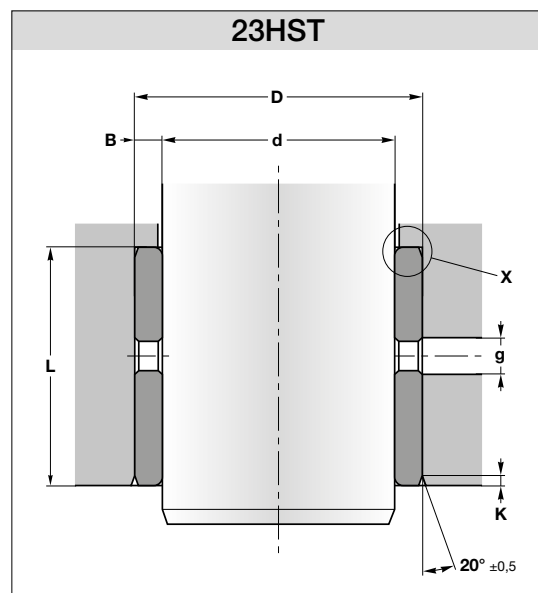
#### Technical specification

Temperature	- 195 to + 300°C
Friction coefficient	0,05 to 0,25
<b>Maximum load</b>	
Dynamic	150 N/mm <sup>2</sup>
Static	250 N/mm <sup>2</sup>
<b>Maximum speed</b>	
With grease	0,6 m/s
In hydrodynamic working	0,6 m/s
<b>PV-factor</b>	
With grease	1,2 N/mm <sup>2</sup> . m/s
In hydrodynamic working	1,2 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,8 μm
Shaft hardness	HB > 300

#### Advantages

- Large temperature range
- Re-lubrication possible
- Suitable for contaminated environments
- Shock and vibration proof
- Good wear resistance
- 100 % recyclable
- Low clearance during operation
- Limited dimensions

Please contact us for applications approaching maximum values.



D	K
< 50	0,8 ±0,3
50 < 150	1,5 ±0,5
> 150	2,5 ±1

B	f
< 39	2
40 < 49	2,5
> 50	3

Tolerances		
d	D	L
f7 / g8	H7	j13

d	D	L	g	Reference
20	30	20	4	23HST 2030/20
	30	25	4	23HST 2030/25
	30	30	4	23HST 2030/30
	30	40	4	23HST 2030/40
	30	50	4	23HST 2030/50
	30	60	4	23HST 2030/60
25	35	30	4	23HST 2535/30
	35	35	4	23HST 2535/35
	35	40	4	23HST 2535/40
	35	50	4	23HST 2535/50
	35	60	4	23HST 2535/60
	35	80	4	23HST 2535/80
30	40	30	4	23HST 3040/30
	40	40	4	23HST 3040/40
	40	50	4	23HST 3040/50
	40	60	4	23HST 3040/60
	40	80	4	23HST 3040/80
	35	45	30	4
45		35	4	23HST 3545/35
45		40	4	23HST 3545/40
45		50	4	23HST 3545/50
45		60	4	23HST 3545/60
45		80	4	23HST 3545/80
40	50	30	4	23HST 4050/30
	50	40	4	23HST 4050/40
	50	50	4	23HST 4050/50
	50	60	4	23HST 4050/60
	50	80	4	23HST 4050/80
	50	100	4	23HST 4050/100
45	55	30	4	23HST 4555/30
	55	40	4	23HST 4555/40
	55	50	4	23HST 4555/50
	55	60	4	23HST 4555/60
	55	80	4	23HST 4555/80
	55	100	4	23HST 4555/100

d	D	L	g	Reference
50	60	30	6	23HST 5060/30
	60	40	6	23HST 5060/40
	60	50	6	23HST 5060/50
	60	60	6	23HST 5060/60
	60	80	6	23HST 5060/80
	60	90	6	23HST 5060/90
60	100	6	23HST 5060/100	
	65	40	6	23HST 5565/40
55	65	50	6	23HST 5565/50
	65	60	6	23HST 5565/60
65	80	6	23HST 5565/80	
	60	70	6	23HST 6070/40
60	70	50	6	23HST 6070/50
	70	60	6	23HST 6070/60
	70	80	6	23HST 6070/80
70	70	100	6	23HST 6070/100
	80	40	6	23HST 7080/40
	80	50	6	23HST 7080/50
80	80	60	6	23HST 7080/60
	80	70	6	23HST 7080/70
	80	80	6	23HST 7080/80
80	80	100	6	23HST 7080/100
	90	40	6	23HST 8090/40
	90	50	6	23HST 8090/50
90	90	60	6	23HST 8090/60
	90	80	6	23HST 8090/80
	90	100	6	23HST 8090/100
90	100	40	6	23HST 90100/40
	100	50	6	23HST 90100/50
	100	60	6	23HST 90100/60
100	100	80	6	23HST 90100/80
	100	100	6	23HST 90100/100

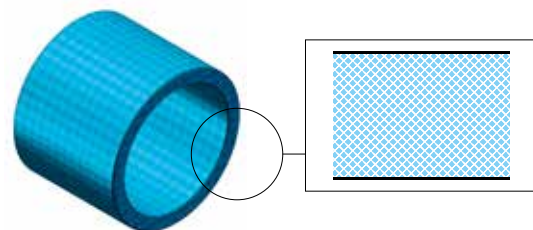






# 23BK500-15N

## Low friction composite bushings



Polyester fabric  
Polyester resin + PTFE

**23BK500-15N** are composite bearings consisting of synthetic fabrics impregnated with thermosetting resins, evenly dispersed solid lubricants and other additives.

**23BK500-15N** bushings offer significant advantages over traditional metal bearings. All are dimensionally stable, have excellent wear resistance and outstanding low-friction characteristics, giving them unrivalled performance in dry running conditions or with boundary lubrication.

With virtually no swell in seawater, they are ideal for marine and hydropower applications.

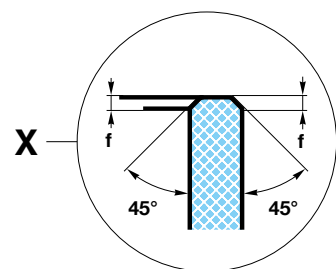
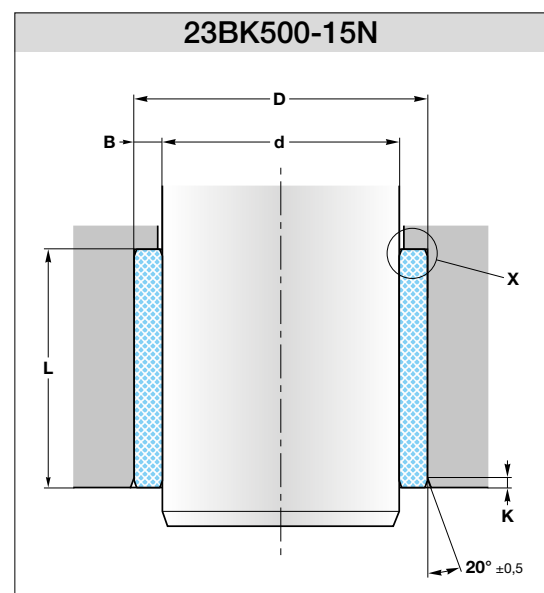
### Technical specification

Temperature	- 200 to + 130°C
Friction coefficient	0,02 to 0,2
<b>Maximum load</b>	
Dynamic	70 N/mm <sup>2</sup>
Static	200 N/mm <sup>2</sup>
<b>Maximum speed</b>	
Dry	2 m/s
With grease	5 m/s
In hydrodynamic working	5 m/s
<b>PV-factor</b>	
Dry	1 N/mm <sup>2</sup> . m/s
With grease	2,5 N/mm <sup>2</sup> . m/s
Shaft roughness	Ra < 0,8 µm
Shaft hardness	HB > 200

### Advantages

- Maintenance-free operation
- Light weight
- Shock and vibration proof
- High loads
- Good friction characteristics
- Low clearance during operation
- Slight water absorption (< 0,1 %)
- Good corrosion resistance
- Good chemical resistance

Please contact us for applications approaching maximum values.



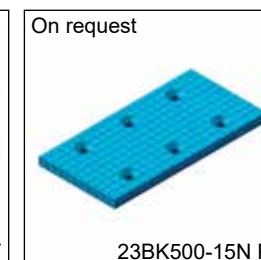
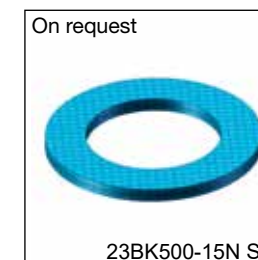
D	K
< 50	0,8 ±0,3
50 < 150	1,5 ±0,5
> 150	2,5 ±1

d	f
< 60	0,5
60 < 89,9	0,8
≥ 90	1

Tolerances		
d	D	L
f7 / g8	H7	j13

d	D	L	Reference
20	26	20	23BK500-15N 2020
	26	30	23BK500-15N 2030
25	31	30	23BK500-15N 2530
	31	40	23BK500-15N 2540
30	36	20	23BK500-15N 3020
	36	30	23BK500-15N 3030
	36	40	23BK500-15N 3040
35	41	30	23BK500-15N 3530
	41	40	23BK500-15N 3540
	41	50	23BK500-15N 3550
40	48	30	23BK500-15N 4030
	48	40	23BK500-15N 4040
	48	60	23BK500-15N 4060
45	53	30	23BK500-15N 4530
	53	40	23BK500-15N 4540
	53	60	23BK500-15N 4560
50	58	40	23BK500-15N 5040
	58	50	23BK500-15N 5050
	58	60	23BK500-15N 5060
55	63	40	23BK500-15N 5540
	63	50	23BK500-15N 5550
	63	70	23BK500-15N 5570
60	70	40	23BK500-15N 6040
	70	60	23BK500-15N 6060
	70	80	23BK500-15N 6080
65	75	50	23BK500-15N 6550
	75	60	23BK500-15N 6560
	75	80	23BK500-15N 6580
70	80	50	23BK500-15N 7050
	80	70	23BK500-15N 7070
	80	80	23BK500-15N 7080
80	80	90	23BK500-15N 7090
	80	100	23BK500-15N 80100
75	85	50	23BK500-15N 7550
	85	70	23BK500-15N 7570
	85	90	23BK500-15N 7590
80	90	60	23BK500-15N 8060
	90	80	23BK500-15N 8080
	90	100	23BK500-15N 80100

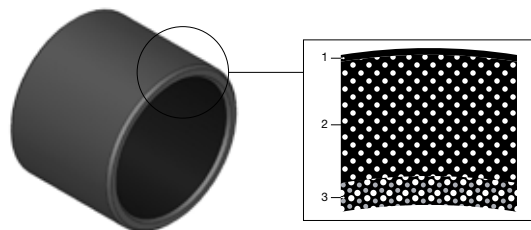
d	D	L	Reference
85	95	60	23BK500-15N 8560
	95	80	23BK500-15N 8580
	95	100	23BK500-15N 85100
90	105	60	23BK500-15N 9060
	105	80	23BK500-15N 9080
	105	120	23BK500-15N 90120
95	110	60	23BK500-15N 9560
	110	100	23BK500-15N 95100
	110	120	23BK500-15N 95120
100	115	80	23BK500-15N 10080
	115	100	23BK500-15N 100100
	115	120	23BK500-15N 100120
110	125	80	23BK500-15N 11080
	125	100	23BK500-15N 110100
	125	120	23BK500-15N 110120
120	135	100	23BK500-15N 120100
	135	120	23BK500-15N 120120
	135	150	23BK500-15N 120150





23BK-EP1

Low friction composite bushings



23BK-EP1 is a continuous wound PTFE and high-strength fibers encapsulated in an internally lubricated, high temperature filled epoxy resin sliding layer + continuous wound fiberglass encapsulated in a high temperature epoxy resin.

Technical specification

Temperature	- 100 to + 160°C
Friction coefficient	0,04 to 0,13
Water absorption	0,13%
Density	1,9 kg/cm <sup>3</sup>
Shore hardness (ISO 868)	95 Sh D
Linear coefficient of thermal expansion	13 x 10 <sup>-6</sup> K <sup>-1</sup>

Maximum load

Dynamic	120 N/mm <sup>2</sup>
Static	240 N/mm <sup>2</sup>

Maximum speed

Dry	0,2 m/s
With grease	5 m/s
In hydrodynamic working	5 m/s

PV-factor

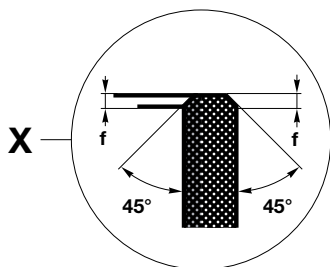
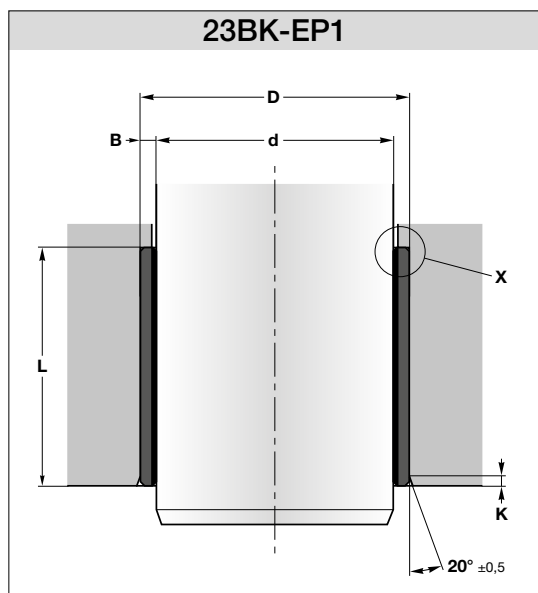
Dry	1,05 N/mm <sup>2</sup> . m/s
With grease	1,8 N/mm <sup>2</sup> . m/s

Shaft roughness	Ra 0,15 to 0,4 µm
Shaft hardness	HB > 350

Advantages

- Simple assembly
- Resistant to shock loads
- Maintenance free operation
- Common to one piece compact design
- High load capacity
- Extended service life
- Dry operation

Please contact us for applications approaching maximum values.



d	f
< 60	0,5
60 < 89,9	0,8
≥ 90	1

D	K	Tolerance K
< 50	0,8	0/+0,3
50 < 150	1,5	0/+0,5
> 150	2,5	0/+1

Tolerances of housing		
d	D	L
h7	H7	j13

Bushing length tolerances		
< 75	75 < 150	≥ 150
-0,5 / 0	-1 / 0	-1,5 / 0

d	D	L	Reference
16	20	15	23BK-EP1 1620/15
	20	20	23BK-EP1 1620/20
20	24	15	23BK-EP1 2024/15
	24	20	23BK-EP1 2024/20
	24	25	23BK-EP1 2024/25
20	26	20	23BK-EP1 2026/20
	26	30	23BK-EP1 2026/30
22	26	20	23BK-EP1 2226/20
	26	25	23BK-EP1 2226/25
25	30	20	23BK-EP1 2530/20
	30	25	23BK-EP1 2530/25
	30	30	23BK-EP1 2530/30
	30	30	23BK-EP1 2530/30
28	34	22	23BK-EP1 2834/22
	34	22	23BK-EP1 2834/22
30	36	20	23BK-EP1 3036/20
	36	30	23BK-EP1 3036/30
	36	36	23BK-EP1 3036/36
	36	40	23BK-EP1 3036/40
	36	50	23BK-EP1 3036/50
35	41	30	23BK-EP1 3541/30
	41	35	23BK-EP1 3541/35
	41	40	23BK-EP1 3541/40
	41	40	23BK-EP1 3541/40
	41	50	23BK-EP1 3541/50
40	48	20	23BK-EP1 4048/20
	48	30	23BK-EP1 4048/30
	48	40	23BK-EP1 4048/40
	48	40	23BK-EP1 4048/40
	48	50	23BK-EP1 4048/50
45	53	30	23BK-EP1 4553/30
	53	40	23BK-EP1 4553/40
	53	45	23BK-EP1 4553/45
	53	50	23BK-EP1 4553/50
	53	60	23BK-EP1 4553/60
50	58	30	23BK-EP1 5058/30
	58	40	23BK-EP1 5058/40
	58	50	23BK-EP1 5058/50
	58	50	23BK-EP1 5058/50
	58	60	23BK-EP1 5058/60

d	D	L	Reference
55	63	30	23BK-EP1 5563/30
	63	40	23BK-EP1 5563/40
	63	60	23BK-EP1 5563/60
60	70	30	23BK-EP1 6070/30
	70	40	23BK-EP1 6070/40
	70	45	23BK-EP1 6070/45
	70	50	23BK-EP1 6070/50
60	70	60	23BK-EP1 6070/60
	70	60	23BK-EP1 6070/60
65	75	50	23BK-EP1 6575/50
	75	50	23BK-EP1 6575/50
	75	50	23BK-EP1 6575/50
70	80	40	23BK-EP1 7080/40
	80	50	23BK-EP1 7080/50
	80	55	23BK-EP1 7080/55
	80	60	23BK-EP1 7080/60
	80	70	23BK-EP1 7080/70
	80	80	23BK-EP1 7080/80
70	80	90	23BK-EP1 7080/90
	80	90	23BK-EP1 7080/90
75	85	50	23BK-EP1 7585/50
	85	60	23BK-EP1 7585/60
	85	70	23BK-EP1 7585/70
	85	70	23BK-EP1 7585/70
	85	80	23BK-EP1 7585/80
80	90	50	23BK-EP1 8090/50
	90	60	23BK-EP1 8090/60
	90	70	23BK-EP1 8090/70
	90	70	23BK-EP1 8090/70
	90	80	23BK-EP1 8090/80
85	95	60	23BK-EP1 8595/60
	95	80	23BK-EP1 8595/80
	95	80	23BK-EP1 8595/80
90	105	70	23BK-EP1 90105/70
	105	80	23BK-EP1 90105/80
	105	80	23BK-EP1 90105/80
100	115	80	23BK-EP1 100115/80
	115	100	23BK-EP1 100115/100
	115	120	23BK-EP1 100115/120
110	125	100	23BK-EP1 110125/100
	125	120	23BK-EP1 110125/120
120	135	100	23BK-EP1 120135/100
	135	120	23BK-EP1 120135/120

Reference 19POSTER.PO

Reference 19POSTER.MS

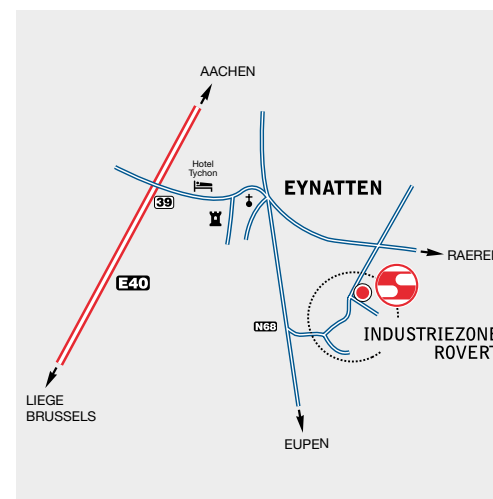
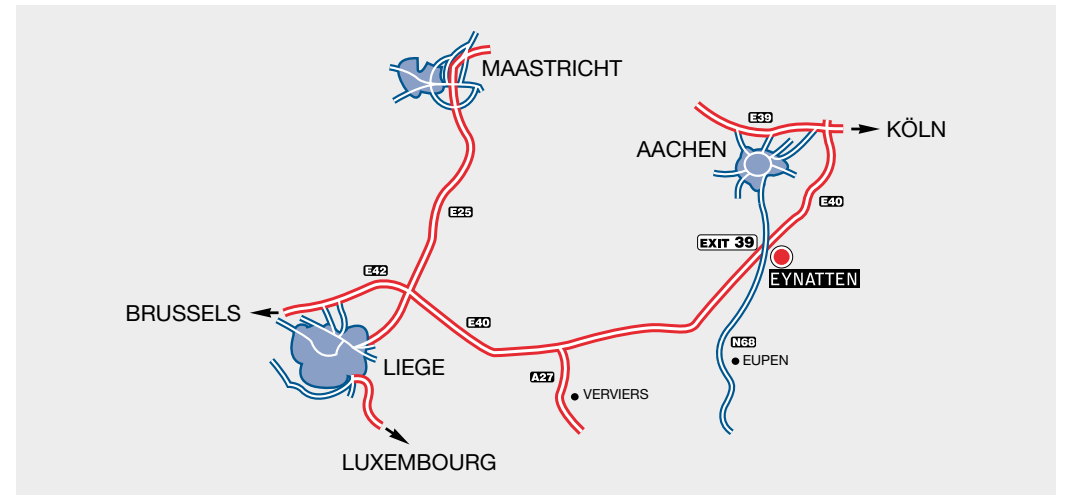
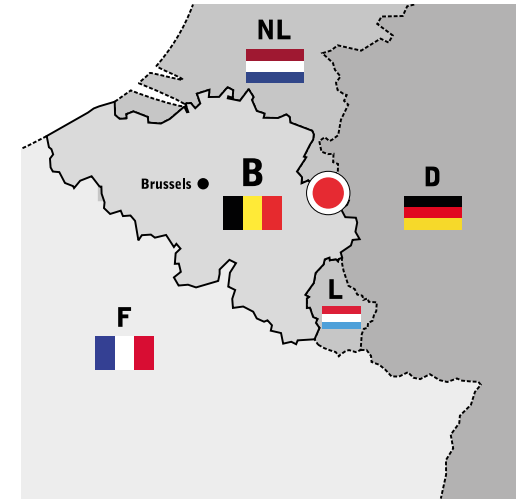
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Seal Kits

ST.KJ.17.E.a

www.sealtech.be  
www.sealtech-business.be

Reference 19CAT ST.KJ.18



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The **pressure, temperature and speed** values in this catalogue are maximum values **which can never be used simultaneously.** The maximum pressure allowed by the seal will depend on temperature, speed and **gap dimension e.**

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